

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 08-139834  
(43)Date of publication of application : 31.05.1996

(51)Int.Cl.

H04N 1/00  
B41J 2/175  
B41J 11/42  
B41J 29/46  
H04N 1/04

(21) Application number : 06-271407

(71)Applicant : CANON INC

(22) Date of filing : 04.11.1994

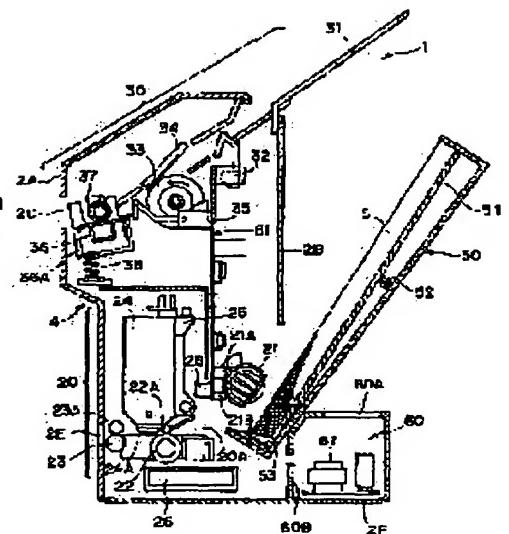
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**(54) FACSIMILE EQUIPMENT**

(57) Abstract:

**PURPOSE:** To provide the facsimile equipment having an ink jet recorder in which wiring of a harness provided between a sensor and a control board is suppressed while sufficiently utilizing a function of each sensor relating to reading/recording.

**CONSTITUTION:** The facsimile equipment is provided with a read section 30 reading information sent externally via a control system from an original being carried, a recording section 20 provided under a read section and providing an output of the information fed via the control system onto a recorded medium, a control board for control arranged vertically from a lower part of an original carrier path to an upper part of the recorded material carrying path, and reflection sensors 21B, 28 arranged at a position above the supply path of the control board 61.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of  
rejection]

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**CLAIMS****[Claim(s)]**

[Claim 1] Facsimile apparatus characterized by providing the following. The read station read in a manuscript while conveying the information for having the conveyance way of a manuscript and sending out outside through a control system. The Records Department which outputs the information read in the information or the aforementioned read station which has the feeding way which feeds a recorded material from a feeding means, has been arranged under the aforementioned read station, and was supplied from the outside through the aforementioned control system on the aforementioned recorded material. The control board by which it was arranged in the vertical direction over the upper part of the aforementioned recorded material conveyance way from the conveyance way lower part of the aforementioned manuscript, and the circuit of the aforementioned control system was arranged in the means for controlling operation of the aforementioned read station and the Records Department, and the circuit row. The reflected type sensor which can detect the record on the aforementioned recorded material which was arranged in the position equivalent to the aforementioned section of this control board recorded material feeding on the street, and was led to this feeding way.

[Claim 2] It is the facsimile apparatus according to claim 1 the aforementioned Records Department has two or more follower KORO which carries out a pressure welding to the conveyance roller and this conveyance roller for leading the aforementioned recorded material to a record position through the aforementioned feeding way, and collaborates in conveyance, and carry out that the aforementioned reflected type sensor detects record of the position from which it separated from the rolling locus of aforementioned follower KORO in the cross direction of the aforementioned recorded material as the feature.

[Claim 3] The aforementioned Records Department is facsimile apparatus according to claim 1 or 2 characterized by being an ink-jet record formula possessing the ink-jet recording head which records by breathing out ink on the recorded material led to the record position through the aforementioned feeding way.

[Claim 4] The aforementioned recording head is facsimile apparatus according to claim 3 characterized by being a serial type record means by which record by breathing out ink and sheet delivery of the aforementioned recorded material is carried out by the aforementioned conveyance roller and follower KORO for every record of 1 scan during the scan of the feeding direction and the crossing direction along with the recorded material led to the aforementioned record position.

[Claim 5] The aforementioned reflected type sensor is facsimile apparatus given in the claim 1 characterized by being the ink existence detection sensor which detects the existence of the ink for record, or one term of 4 by detecting the record concentration of the pattern recorded on the aforementioned recorded material at the aforementioned Records Department.

[Translation done.]

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**DETAILED DESCRIPTION****[Detailed Description of the Invention]****[0001]**

[Industrial Application] this invention relates to facsimile apparatus equipped with the ink-jet formula recording device in detail about facsimile apparatus.

**[0002]**

[Description of the Prior Art] Regular paper facsimile apparatus is beginning to spread from predominance, such as a point that \*\* by which facsimile apparatus is divided roughly into regular paper facsimile apparatus and sensible-heat facsimile apparatus according to the kind of the printer can especially use shelf life, an environmental problem, a copying machine, and paper in common recently.

[0003] Its attention is paid to the regular paper facsimile apparatus which was cheap especially, and was obtained and carried the ink-jet formula recording device at the compact point.

[0004] The fundamental composition of the conventional facsimile apparatus is shown in drawing 10 . That is, the conventional facsimile apparatus 100 is fundamentally constituted in order of the lower shell electrical-and-electric-equipment substrate section 110, the Records Department 120, the manuscript read station 130, and the control unit 140, and the control board 101, the network control board 102, and the main power supply 103 are formed in the electric substrate section 110. Furthermore, a predetermined pattern is recorded on the pickup roller sensor 122 which detects that the record sheet pickup roller 121 makes one revolution, the paper edge sensor 123 which detects the nose of cam and the back end of a record sheet, and a record sheet, by detecting the concentration, the existence of ink is detected in the Records Department 120, or the sensors of the footer sensor 124 grade which can judge a jam are prepared for it. Moreover, the sensors of the manuscript edge-sensor 132 grade which detects the nose-of-cam back end of the manuscript existence detection sensor 131 and a manuscript which detects the existence of a manuscript are formed in the read station 130. And the harness of a substrate and a wiring bunch is prepared in these sensors, respectively, and as the inside of a main part is taken about, the above-mentioned control board 101 connects the harness.

[0005] On the other hand, since the baton switch 142 for a start key, a stop key, etc., LCD143 as a display, etc. are mounted in the operation substrate 141 of a control unit 140 and such an operation substrate 141 is arranged more nearly up than a manuscript conveyance way, the harness from the operation substrate 141 to a control board 101 must avoid the cross direction of a manuscript conveyance way, and the cross direction of a record sheet feeding way, must wire, and is very long.

[0006] The primary member furthermore prepared in each part in drawing 10 is explained.

[0007] It is the recording head which records by breathing out ink to record-sheet S by which the platen roller for the sheet electrode holder for 125 feeding record sheet S, the conveyance roller which conveys record-sheet S into which one 126 is fed at a time from the sheet electrode holder 125 of a feeding cassette with the pickup roller 121 for record in a record position, and 127 holding record-sheet S in a record position, and 128A and 128B are held at an eccentric roller and the spur koro, and 129 is held in a record position.

[0008] Moreover, the adhesion formula image sensors which read a picture in on the manuscript with which 133 passes a manuscript separation roller and 134 passes through a manuscript passage side top, and 135 are CS rollers for maintaining a manuscript at an adhesion state on image sensors 134.

**[0009]**

[Problem(s) to be Solved by the Invention] However, in the facsimile apparatus which carried the conventional ink-jet formula recording device, in order that many substrates, such as the operation substrate 141, a control board 101, the network control board 102, substrate 131 for manuscript existence detection sensors A, substrate 132 for manuscript edge sensors A, substrate 122 for pickup roller sensors A, substrate 123 for record sheet edge sensors A, and substrate

124 for footer sensors A, may be scattered to each part and may connect between each substrate, you have to take about many harnesses in equipment. Since a manuscript conveyance way and a record sheet feeding way were prepared and a harness was not able to be taken about in these ways or changing positions, especially in the case of facsimile apparatus 100, assembly nature was worsened remarkable, it reduced the grace of the chisel \*\* and the equipment which cause the rise of cost, and that an above-mentioned substrate exists in the upper and lower sides of a manuscript conveyance way and a record sheet feeding way had many fault points, such as a restraint of composition conditions. Moreover, if a harness is devised and it is made to take about at various places, these harnesses will carry out the duty of an antenna, and will generate a radiated noise so much, and radio and television will be affected.

[0010] Therefore, radiated-noise cure parts, such as a shield board, must be arranged in various places, and quality is not stabilized, either, when assembly nature will become still worse, if this part is attached.

[0011] In the facsimile apparatus especially using the ink-jet formula recording device, existence of the footer sensor 124 is important. Because, although a noticing ink head cartridge is exchanged immediately only in the case of a mere ink-jet formula recording device and an operator should just record it again if ink is lost and information is not recorded since it is a premise that an operator is on that occasion, since it is auto-receipt in the case of facsimile apparatus and there is no operator, it is a critical defect to carry out auto-receipt in the state [ that there is no ink freely ]. Therefore, ink residue detection is an indispensable function for this facsimile apparatus, and the footer sensor 124 is an effective means with certainty as the way stage. Therefore, as natural arrangement for making the record state legible, it is the eccrisis side of the Records Department 120, and when the footer sensor 124 was arranged in the facsimile apparatus 100 using the ink-jet formula recording device, it was arranged by about 128 eccrisis roller so that dispersion in the height of a record sheet might moreover be pressed down so that drawing 10 might see.

[0012] However, even if it does in this way, in addition, the following thing is mentioned as a trouble.

[0013] \*\* If the footer sensor 124 is arranged in the discharge roller 128, it will be easy to be influenced of outdoor daylight. That is, although there is still ink, it may be incorrect-recognized as the output having become high and ink having been lost under the influence of outdoor daylight. Although the footer sensor 124 must be separated from the discharge roller 128 for this cure, there is no space between the ink head cartridge 129 and the discharge roller 128 not much so that it may understand in view of drawing 10 . This is for raising conveyance nature so that a jam etc. may not be generated in the record sheet discharged by shortening the paper path from the ink head cartridge 129 to the discharge roller 128 other than the reason for miniaturizing equipment. Therefore, only in order to separate the footer sensor 124 from a discharge roller easily, between a cartridge 129 and the discharge rollers 128 cannot be detached.

[0014] \*\* From the scanning field of the ink head cartridge 129, and the conveyance field of a record sheet, as the harness from each sensor to a control board 101 is avoided, it must be taken about, and for the reason, assembly nature becomes very bad.

[0015] It is [ to aim at the solution paying attention to the above-mentioned conventional trouble ] to offer facsimile apparatus equipped with the ink-jet formula recording device laid so that the functional disorder and bird clapper of the facsimile apparatus itself may not have the harness of the wiring moreover formed among these sensors and control boards, the purpose of this invention beginning a footer sensor and fully employing the function of each sensors efficiently.

[0016]

[Means for Solving the Problem] The read station read in a manuscript while conveying the information for this invention having the conveyance way of a manuscript and sending out outside through a control system in order [ this ] to carry out the purpose achievement, With the Records Department which outputs the information read in the information or the aforementioned read station which has the feeding way which feeds a recorded material from a feeding means, has been arranged under the aforementioned read station, and was supplied from the outside through the aforementioned control system on the aforementioned recorded material The control board by which it was arranged in the vertical direction over the upper part of the aforementioned recorded material conveyance way from the conveyance way lower part of the aforementioned manuscript, and the circuit of the aforementioned control system was arranged in the means for controlling operation of the aforementioned read station and the Records Department, and the circuit row, It is arranged in the position equivalent to the aforementioned section of this control board recorded material feeding on the street, and is characterized by providing the reflected type sensor which can detect the record on the aforementioned recorded material led to this feeding way.

[0017]

[Function] Although the data which read the manuscript for sending out outside in the read station, and were supplied from the outside are recordable on a recorded material at the Records Department according to this invention Without distributing various substrates, since it arranged collectively on the control board which arranged the circuit in connection with the motion control of the control system in connection with data communication with the exterior and

a read station, and the Records Department in the vertical direction over the upper part of a recorded material feeding way here from the lower part of a manuscript conveyance way again Harness leading about in the meantime can prevent becoming the factor of radiated-noise generating.

[0018] Moreover, it can \*\* maintaining a reflected type sensor at a downward detection posture by having formed the reflected type sensor which can detect record on a recorded material on the control board which hits the recorded material feeding on-the-street section, and the detection depression by outdoor daylight is prevented.

[0019]

[Example] Below, based on a drawing, the example of this invention is shown in detail and concretely.

[0020] Drawing 1 - drawing 3 show the example of composition which shows the feature of this invention best. That is, the place by which it is characterized [ of this invention ] is to have arranged [ to have arranged in lengthwise / up-and-down /, as the control board was made to meet the Records Department from a read station, and ] the detection means in connection with the control system directly on the control board while arranging a read station above the Records Department, as shown in these drawings.

[0021] In these drawings, 1 is the facsimile apparatus which equipped the Records Department 20 with the ink-jet formula recording device, and the read station to which 30 reads a picture in a manuscript, the control unit which arranged 40 (see drawing 2 and drawing 3 ) in the topmost part, the automatic feeding equipment (ASF) with which 50 feeds record sheet S into the Records Department 20, and 60 are the main-power-supply sections. Then, the composition of the read station 30 concerning this invention is explained first.

[0022] The scraper for the manuscript existence detection sensor by which 31 detects a manuscript feeding base and 32 detects the existence of the manuscript on the manuscript feeding base 31, and 33 being formed with a separation roller in a read station 30, and 34 being formed with rubber etc., collaborating in contact with the separation roller 33, and sending out only one manuscript to a reading station, and 35 are manuscript edge sensors which detect the both ends of a manuscript.

[0023] 61 is the control board arranged in the vertical direction in the case 2 of facsimile apparatus 1 in the form almost in parallel with front-cover 2A and rear-face covering 2B, and with the manuscript existence detection sensor 32 and manuscript edge in connection with reading operation, while, as for a sensor 35, those bases are attached in a control board 61, although the signal line from these sensors does not carry out illustration, it is arranged on the control board 61.

[0024] After the adhesion formula image sensors and 36A which read a picture in the manuscript which 36 read and has been led to a position, and are changed into an electrical signal have made the image-sensors electrode holder image sensors 36 and 37 has made the pressure welding of the manuscript, while concerned with the conveyance, the CS roller with which the very thing has the function of white criteria, the spring with which 38 is deflecting image sensors 36 through image-sensors electrode-holder 36A towards the CS roller 37, and 2 C are the manuscript exhaust ports which carry out opening to front-cover

[0025] In addition, the separation roller 33 and the CS roller 37 which are shown in drawing 1 are a motor (henceforth a reading motor) supported by inner flame 2D here. drawing 2 -- and drawing 3 -refer to -- it drives by 39 and 39A and 39B are the transfer system gear trains for transmitting the driving force of the reading motor 39 to the separation roller 33 and the CS roller 37

[0026] Then, the composition of the Records Department 20 and ASF50 is explained.

[0027] The Records Department 20 records the picture corresponding to the feeding signal from the outside from ASF50 on record sheet S fed one sheet at a time with a pickup roller 21, 22 is a conveyance roller in connection with conveyance and sheet delivery of record sheet S, and the front face is put by elastic bodies, such as rubber.

[0028] The discharge roller which pressure-welding KORO which carries out the pressure welding of the 22A to the conveyance roller 22, and collaborates in delivery operation of record sheet S, and 23 hold record sheet S in a record position with the conveyance roller 22, collaborates in conveyance, and discharges record sheet S [ finishing / record ] from exhaust port 2E, and 23A are spurs which collaborate with the discharge roller 23. 24 is the head unit (it is only called a head cartridge below) of the cartridge-type which the recording head and ink tank of an ink-jet formula are formed in one, are carried in carriage 25, and carries out horizontal scanning in the direction perpendicular to space, and records by breathing out ink towards a record sheet S top from ink delivery 24A during horizontal scanning.

[0029] 26 is a waste ink tank which suspends the ink discharged by recovery means by which it did not illustrate [ which makes ink breathe out compulsorily from ink delivery 24A of a head cartridge 24 ]. Moreover, the carriage motor to which 27 shown in drawing 2 moves carriage 25, and 27A are timing belts which connect with carriage 25 and are driven by the carriage motor 27. Furthermore, it is made to deflect towards the separation presser foot stitch tongue 53 so that it can feed at a time one record sheet S held at the state where ASF50 was also well-known and was accumulated on the support plate 51 again according to the spring force of a spring 52. And the front end and the back

end of record sheet S which are sent out while one of them is detecting operation fed with a pickup roller 21 by pickup roller sensor 21A are detected by paper edge-sensor 21B.

[0030] It is the footer sensor which detects the footer mark on record sheet S as mentioned 28 later, and these bases are being fixed on the control board 61 with pickup roller sensor 21A and paper edge-sensor 21B which mentioned the footer sensor 28 above. Therefore, operation which a pickup roller 21 turns by detecting piece of detection 21C which rotates with a pickup roller 21 by pickup sensor 21A is detected. Moreover, the state where record sheet S passes through the position of a sensor lower part by paper edge-sensor 21B can be detected, the footer mark on record sheet S can be detected further again by reverse conveyance which the conveyance roller 22 and the discharge roller 23 mention later, and the existence of ink etc. can be judged.

[0031] Subsequently, the composition of a control unit 40 is explained, referring to drawing 2 and drawing 3.

[0032] In these drawings, as 41 is shown in drawing 3, two or more operation keys arranged in the lining-up-side-by-side direction, the baton switch by which 42 is turned on and off according to depression operation of the operation key 41, and 43 are the supporting points of the operation key 41, and LCD which 44 is held between front-cover 2A and rear-face covering 2B, and is electrically connected to a control board 61, and 45 are the transparent boards formed in the front face of LCD44. Moreover, on the control board 61, Light Emitting Diode46 for displaying turning on and off of the baton switch 42 by the operation key 41 is formed, and a future light is led to the blink display 48 on front-cover 2A through the RAIDO guide 47, and it is constituted so that each turning on and off may be checked by check by looking.

[0033] Drawing 4 - drawing 6 look at and show further the composition of the facsimile apparatus 1 by this invention from a transverse-plane and tooth-back side. The composition of the circumference of the network control board 62 for network control required for the facsimile apparatus 1 arranged together with a control board 61 and a control board 61 from a transverse-plane side is shown in drawing 4 among these drawings. In addition, as drawing 5 shows the tooth-back side of facsimile apparatus 1, drawing 6 mainly shows the circumference of a control board 61 and the network control board 62 from a tooth-back side and it is shown in these drawings, a control board 61 and the network control board 62 are electrically connected by Connectors 61A and 62A. Free, 63 is an external circuit, a child telephone, etc. and the modular jack of connection that can be switched, and in order to reduce the number of harnesses, and the number of substrates, as preferably shown in drawing 6, it is directly mounted in the network control board 62.

[0034] in addition -- since a hand set (headset) 64 is arranged on the left-hand side of common use selfish shell equipment 1 -- following -- from a transverse plane -- seeing -- left-hand side -- the network control board 62 -- preparing -- this network control board 62 -- a modular jack 63 is further formed in a left end side, and it was made to connect a hand set 64 to this However, as shown in drawing 5, a modular jack 63 is formed on rear-face covering 2B, and you may make it connect electrically between a modular jack 63 and the network control boards 62 with wiring. 65 is an interface connector for connection with the exterior, does not become the hindrance of sheet conveyance from wiring of KOMPYUTAHE from an interface 65 about this like this example by the thing on a control board 62 moreover arranged in a record sheet path upper part right end side, but can be prevented from causing trouble also functionally. An end is the flexible cable by which connects with a head cartidge 24 and the other end is connected to a control board 61, and, as for 66, the record signal corresponding to the manuscript picture is fed into a head cartidge 24 through the flexible cable 66. Moreover, 29 is a motor for record sheet conveyance (henceforth a record motor). 20A which shows 2F shown in drawing 5 to a manuscript sending mouth and drawing 6 is a sheet path (feeding way) through which it passes in case record sheet S is fed from ASF50.

[0035] Moreover, in this example, the main-power-supply section 60 has been arranged behind [ bottom ] facsimile apparatus 1, as shown in drawing 1, drawing 2, and drawing 6, and it has dissociated from the control board 61 or the network control board 62. As shown in drawing 1 and drawing 2, ventilating-hole 60A is prepared and it can be tended to acquire upper surface covering of the main-power-supply section 60 the air-cooling effect in this way. Furthermore, it was made for ink not to infiltrate into the main-power-supply section 60 from the Records Department 20 side again by making batch section 60B start from bottom covering 2F between the main-power-supply section 60 and the Records Department 20. A cable 68 seems in addition, for a distribution cable 68 not to connect, as the position which removed feeding way 20A of record sheet S shows to drawing 2, and not to cause trouble to record operation between a main power supply 67 and a control board 61.

[0036] Then, the circuitry for control which starts this invention by drawing 7 is shown. Here, 10 is the central processing unit CPU which consists of microprocessors etc., and controls the equipment 1 whole according to the program stored in ROM3. 4 is RAM, and in RAM4, the modem section 5 becomes irregular and it stores the binary-ized image data for outputting to the telephone line 6 through network control unit (NCU) 62A while it stores the binary-ized image data recorded by the binary-ized image data and the Records Department 20 which were read by the read station 30. After the analog wave signal inputted through the telephone line 6 gets over to digital value in

NCU62A and the modem section 5, it is stored in RAM4 further again.

[0037] 7 is nonvolatile RAM and the data (for example, abbreviated dialing number) which should be saved even if it is in the state where the power supply was intercepted by nonvolatile RAM 7 are stored. 8 is a character generator in which characters, such as JIS code and an ASCII code (ASCII code), are stored, and the data corresponding to a code predetermined with 2 bytes of sign are stored in the character generator 8, and it is taken out free according to the demand of CPU10.

[0038] Circuit 30A is a read station control circuit, and circuit 30A consists of a DMA (direct memory access) controller, an image processing IC, image sensors, a CMOS logic IC, etc., makes binary the data read using the contact sensor (CS) based on control of CPU10, and sends out the binary-ized data to RAM4 one by one. In addition, the manuscript state set to the read station 30 is detected by the manuscript existence detection sensor 32 formed in the conveyance way of a manuscript, and a manuscript detection signal is inputted into the main-power-supply control section 9 and CPU10. Record control circuit 20A consists of a DMA controller, an ink-jet recording device, a CMOS logic IC, etc., takes out the record data stored in RAM4 by control of CPU10, and carries out a record output as hard copy.

[0039] The modem section 5 consists of KURO@KKU generating circuits connected to G3, and the modems and these modems of G2, modulates the transmit data stored in RAM4 based on control of CPU10, and outputs it to the telephone line 6 through network control unit 62A. Moreover, the modem section 5 introduces the analog signal of the telephone line 6 through NCU62A, modulates the signal, and stores binary-ized data in RAM4. In addition, in NCU62A, it switches and connects with either the telephone-line modem section 5 or the telephone 64 according to control of CPU10. Moreover, NCU62A has a means to detect a call signal (CI), and when a call signal is detected, it sends a terminating signal to a main-power-supply control section and CPU10. In addition, telephone 64 has the speech network, the dial, the ten key, or the one-touch key besides the hand set in more detail here.

[0040] Moreover, the control unit 40 consists of mode selection keys and ten keys for dialing, or one-touch keys etc. which specify the operation modes, such as a key which starts picture transmission, reception, etc., a fine \*\* standard at the time of transmission and reception, and auto-receipt, and ON signal will be inputted into the main-power-supply control section 9 and CPU10 if these keys are pushed. Moreover, a predetermined character etc. is displayed on the liquid crystal display (shown in drawing 3 as LCD44 and transparent covering 45) which can display 16 figures by control of CPU10. The main-power-supply control section 9 controls the energization (electric power supply) to each part (block) of the facsimile apparatus 1 whole, consists of 1 chip microcomputer and capacitor type rechargeable batteries etc., and can drive at least a supply voltage from this rechargeable battery. In addition, in the main-power-supply control section 9, an input of the manuscript detecting signal from read station control circuit 30A, the terminating signal from NCU62A, or ON signal from a control unit 40 sends a seizure signal to a main power supply 60. That is, it is the switching power supply of AC input, and a main power supply 60 can control ON of the switching from the outside, and OFF, and power is supplied, respectively by the seizure signal from the main-power-supply control section 9, and the stop signal, or it does not supply power. The portion enclosed with the dashed line in the above function is mounted in a control board 61.

[0041] Then, the installation position of the footer sensor 28 established in this invention and detection operation are explained with reference to (A), (B), and drawing 9 of drawing 8 .

[0042] Since there is auto-receipt in facsimile apparatus 1, as stated also in advance, it is different, equipment must detect automatically that ink was lost, and the detection means of a common printer is indispensable.

[0043] The footer sensor 28 is formed as this detection means, and as shown in (A) of drawing 8 , it records the sensor delivery-volume pattern 71 on the predetermined position of the sheet margin after record is completed. In addition, in this example, a 5mmx5mm rectangle is recorded. This pattern 71 is detected by the reflected type footer sensor 28, and the existence of ink is judged by the output value which shows record concentration. That is, since the pattern 71 of an above-mentioned rectangle is recorded when there is ink, the output from the footer sensor 28 becomes low. On the other hand, since the rectangular pattern 71 is not recorded when ink stops being in the middle of record etc. as shown in (B) of drawing 8 , the output from 28 of a footer sensor becomes high. Therefore, when an output value is detected and the output value beyond a predetermined value is obtained, it judges that there is no ink and considers as an error.

[0044] In addition, it is conveyed with the frictional force between the conveyance roller 22 and record sheet S, pressure-welding koro 22A is supported by koro shaft 22B as shown in drawing 4 , record sheet S is in the state pinched by the conveyance roller 22 and pressure-welding koro 22A as mentioned above, and only the portion of pressure-welding koro 22A is in contact with record sheet S. In addition, in this example, pressure-welding koro 22A is put in order by four regular intervals to the cross direction of a record sheet. On the other hand, the conveyance roller 22 is driven by the record motor 29, and by [ of the record motor 29 ] carrying out a normal rotation inversion, it is constituted so that the normal rotation inversion of the conveyance roller 22 may be carried out.

[0045] above -- a control board 61 -- between ink delivery 24A of a head cartridge, and pickup rollers 21 -- and it is more nearly up than record sheet path 20A, and is arranged more below than a manuscript conveyance way And the footer sensor 28 which is a reflected type sensor is formed in the position which can detect the recording surface of the record sheet of the position near sheet path 20A of the control board 61. In addition, the position of the record sheet cross direction of the footer sensor 28 is a portion without pressure-welding KORO 22A, as shown in drawing 4 , and it is arranged in the passage field of minimum width-of-face record sheet S.

[0046] Next, according to drawing 9 , basic operation of the ink existence detection by footer mark detection is explained.

[0047] Step S1 Sheet delivery of the record sheet S is carried out in the direction of arrow A by drawing 8 by the right rotation drive of the record motor 29, and the usual record operation is performed.

[0048] Step S2 It records according to the data from a read station 30, the data sent from the telephone line 6, or the data sent from the computer.

[0049] Step S3 It is the back end margin portion of record sheet S, and the footer mark 71 of a 5mmx5mm rectangle is recorded on the position of the footer sensor 28, and a position in agreement in the record sheet cross direction.

(However, a normal mark is not obtained when there is no ink.)

Step S4 Specified quantity back feed of the record sheet S is carried out in the direction of arrow B by drawing 8 by the inversion of the record motor 29, and it conveys until the footer mark 71 comes to the position just under the footer sensor 28.

[0050] Step S5 The existence of the footer mark 71 is judged by the output from the footer sensor 28. And although it progresses to Step S6 when the footer mark 71 is detected, when the footer mark 71 is not detected normally, it progresses to Step S7.

[0051] Step S6 It judges whether there is degree page, and when there is the following page, it returns to Step S1. Moreover, when there is no following page, it progresses to Step S7.

[0052] Step S7 A record end is carried out.

[0053] Step S8 By not detecting the footer mark 71, it judges that there is no ink, for example, warns by the error message etc.

[0054] In addition, although a control board 61 is made to extend even up in a position without relation to a path as shown in drawing 2 , drawing 3 , etc. and the baton switch 42 and Light Emitting Diode46 in connection with operation of a control unit 40 were prepared here in the above-mentioned example, even if it does not make a control board 61 not necessarily extend to the height more than a manuscript path, the baton switch 42 and Light Emitting Diode46 can be arranged in the upper part of a control board 61.

[0055] Moreover, although the control board 61 and the network control board 62 were separated on the almost same vertical plane as shown in drawing 4 and drawing 6 , these are constituted in one and you may make it really [ the ] prepare the hole for pulling out the flexible cable 66 to the Records Department 20 side in a substrate.

[0056]

[Effect of the Invention] As mentioned above, the read station read in a manuscript while conveying the information for according to this invention having the conveyance way of a manuscript and sending out outside through a control system as explained, With the Records Department which outputs the information read in the information or the aforementioned read station which has the feeding way which feeds a recorded material from a feeding means, has been arranged under the aforementioned read station, and was supplied from the outside through the aforementioned control system on the aforementioned recorded material The control board by which it was arranged in the vertical direction over the upper part of the aforementioned recorded material conveyance way from the conveyance way lower part of the aforementioned manuscript, and the circuit of the aforementioned control system was arranged in the means for controlling operation of the aforementioned read station and the Records Department, and the circuit row, It is arranged in the position equivalent to the aforementioned section of this control board recorded material feeding on the street, and since the reflected type sensor which can detect the record on the aforementioned recorded material led to this feeding way is provided, the following effects are acquired.

[0057] \*\* The harness in connection with the substrate of each part and a substrate can be reduced as much as possible, and assembly nature is improved sharply.

[0058] \*\* By reducing a substrate and a harness, there are few connector connections in the meantime, and they end, and the reliability of the electrical installation section improves sharply.

[0059] \*\* When leading about of the harness leading to [ of a radiated noise ] generating decreases, a radiated noise decreases.

[0060] \*\* Since a substrate is not arranged more below than a conveyance way including feeding of a record sheet, there is no need for the cure against a shield for making it ink not adhere to a substrate, and cost and assembly nature

are improved sharply.

[0061] \*\* Since a reflected type sensor can be arranged in the position which is not related to outdoor daylight, sensitivity is raised, and positive discernment of the ink residue it is [ a residue ] indispensable to facsimile apparatus equipped with the Records Department of an ink-jet recording method can be performed by using a reflected type sensor as an existence detection sensor of ink.

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[Translation done.]

**\* NOTICES \***

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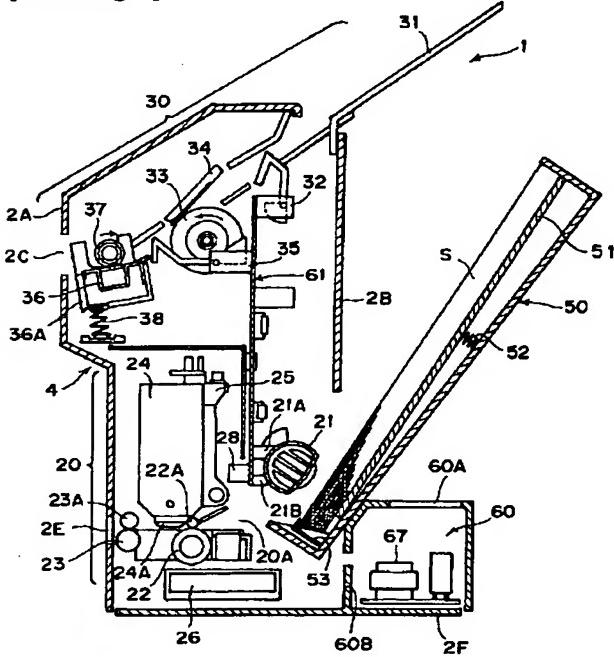
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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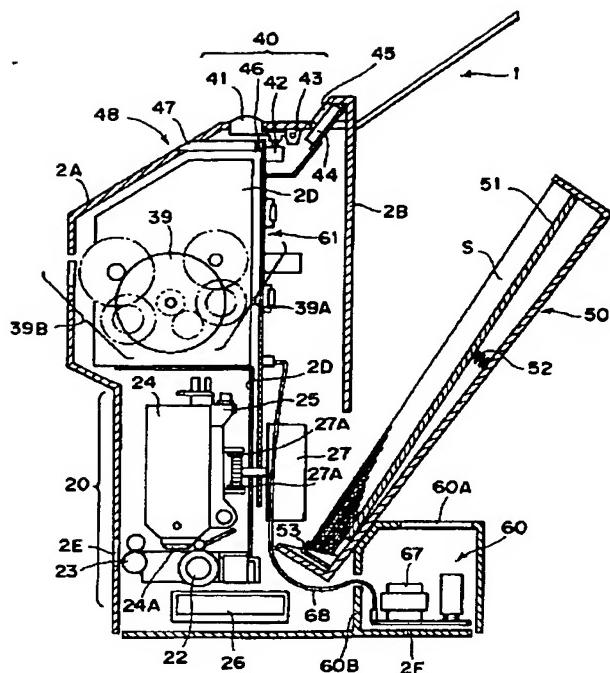
**DRAWINGS**

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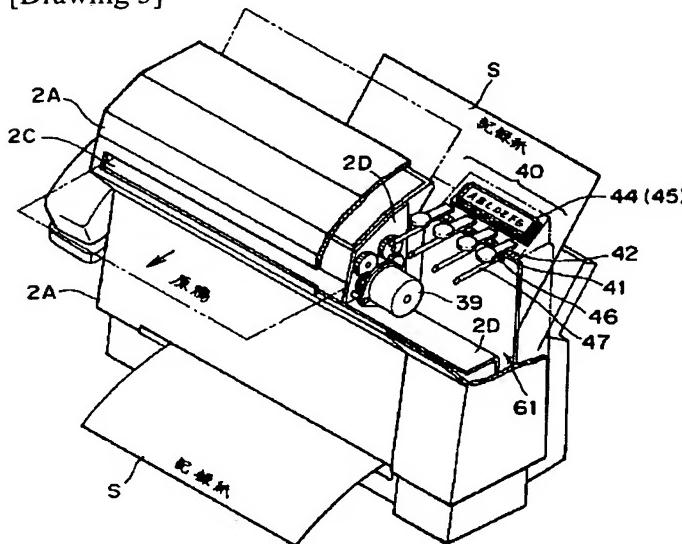
[Drawing 1]



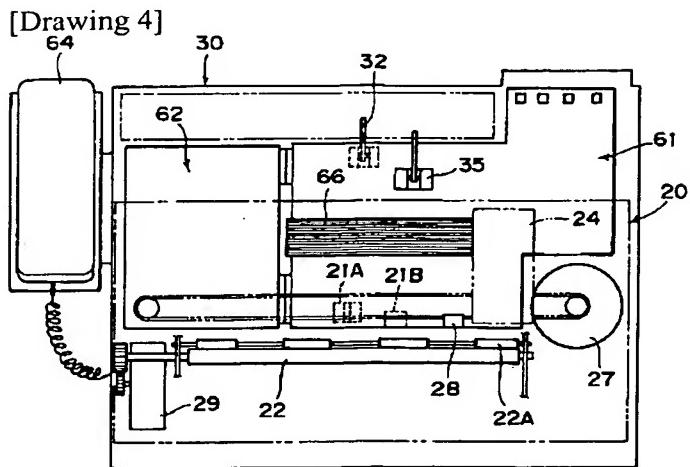
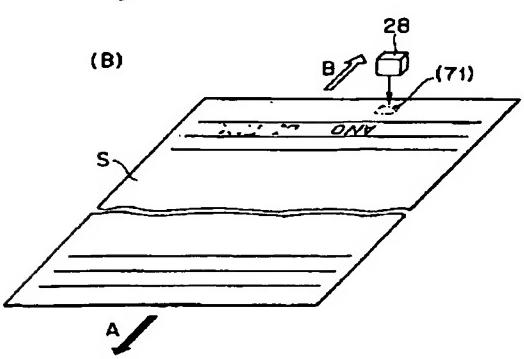
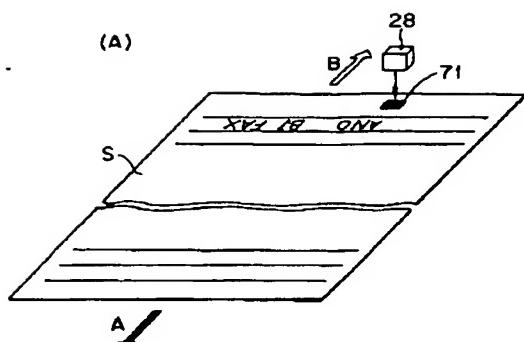
[Drawing 2]



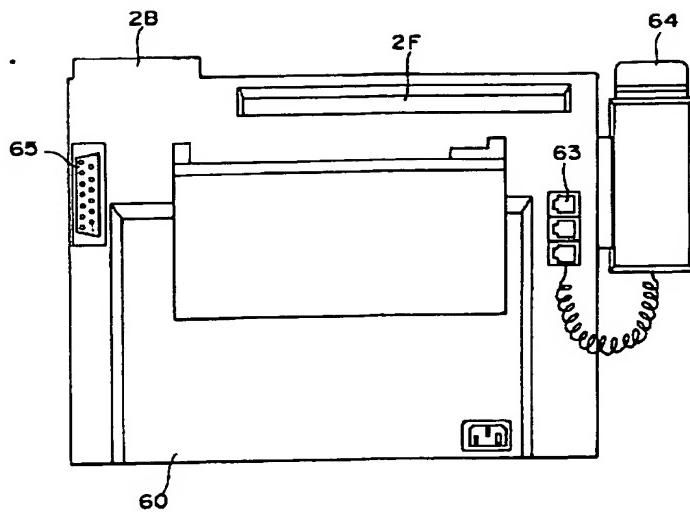
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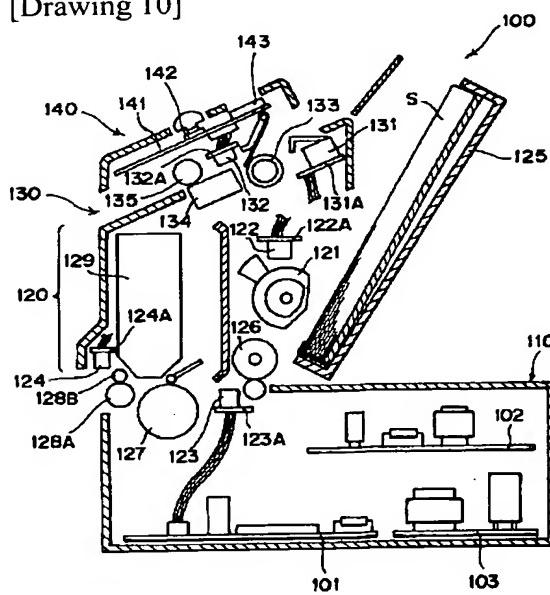
[Drawing 8]



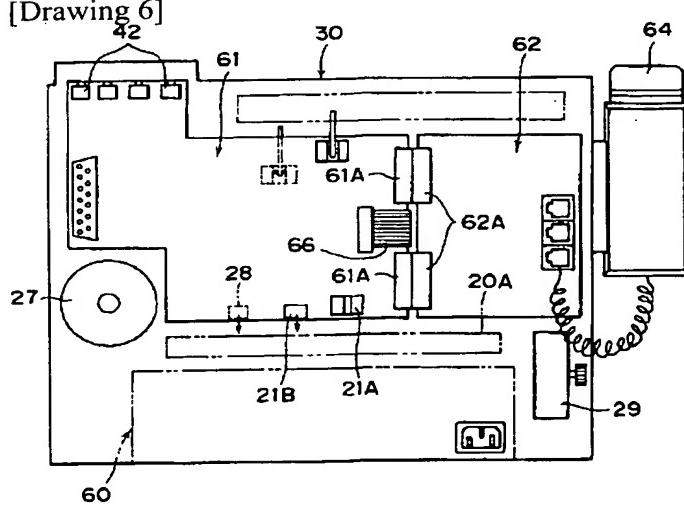
[Drawing 5]



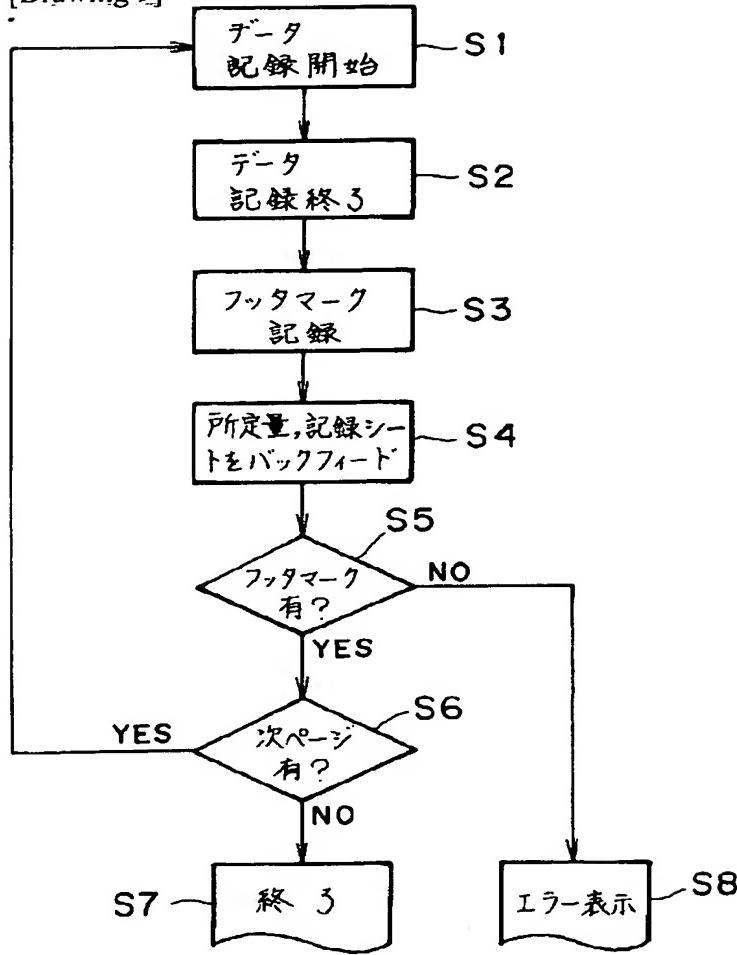
[Drawing 10]



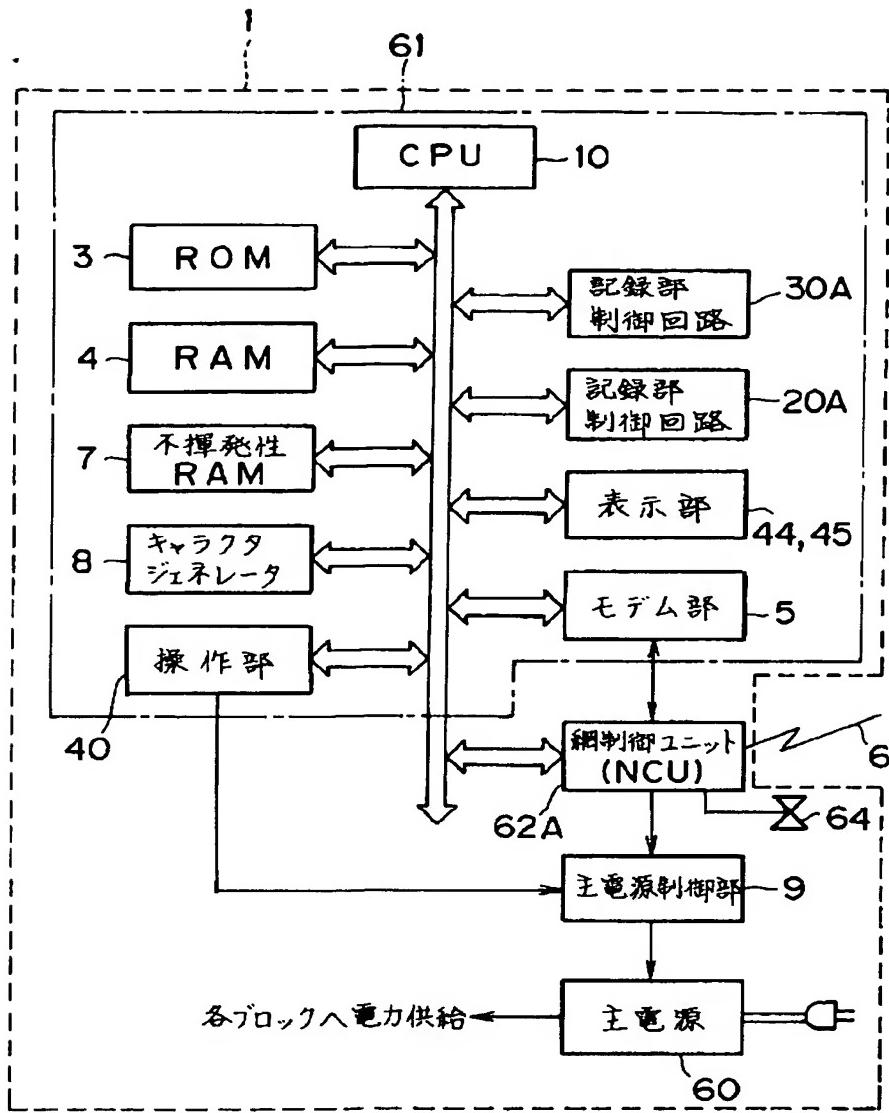
[Drawing 6]



[Drawing 9]



[Drawing 7]



[Translation done.]